

## **CROP IMPROVEMENT USING A SYSTEMS APPROACH TO PLANT BIOINFORMATICS**

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Crop science is rapidly being re-shaped as a data-intensive science as biologists are faced with the growing challenges from both the scale and complexity of the data being generated by transformational technologies such as next generation genome sequencing. Furthermore, the adoption of systems approaches to biological research to address some of the grand challenges in agriculture requires many diverse types of complex data to be brought together in ways that were not previously envisaged. These challenges bring data integration techniques to the fore as one of the unsolved problems for Bioinformatics. In this presentation I will describe how the Bioinformatics group at Rothamsted Research combine high throughput bioinformatics techniques, data integration technologies with data mining and visualisation methods to support the discovery and prioritization of potential candidate genes from datasets generated by research projects in crop genomics. In particular I will describe the QTLNetMiner system that we have developed at Rothamsted to support candidate gene discovery.